

Substitute Sequence Listing

<110> VERMEIJ, Paul
 <120> Hybrid toxins comprising shiga or shiga-like toxin subunits fused to escherichia coli heat labile enterotoxin subunits and vaccines thereof
 <130> I-2003.006 US
 <150> PCT/EP2004/051522
 <151> 2004-07-16
 <150> EP 03077266.9
 <151> 2003-07-21
 <160> 4
 <170> PatentIn version 3.3
 <210> 1
 <211> 1325
 <212> DNA
 <213> Escherichia coli

<220>
 <221> CDS
 <222> (1)..(954)

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 Phe Ser Ser Val Ser Tyr Ser Gln Glu Phe Thr Ile Asp Phe Ser Thr
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 caa caa agt tat gta tct tcg tta aat agt ata cgg aca gtg ata tcg 144
 Gln Gln Ser Tyr Val Ser Ser Leu Asn Ser Ile Arg Thr Val Ile Ser
 35 40 45
 acc cct ctt gaa cat ata tct cag gga gct aca tcg gta tcc gtt att 192
 Thr Pro Leu Glu His Ile Ser Gln Gly Ala Thr Ser Val Ser Val Ile
 50 55 60
 aat cat aca cca cca gga agt tat att tcc gta ggt ata cga ggg ctt 240
 Asn His Thr Pro Pro Gly Ser Tyr Ile Ser Val Gly Ile Arg Gly Leu
 65 70 75 80
 gat gtt tat cag gag cgt ttt gac cat ctt cgt ctg att att gaa cga 288
 Asp Val Tyr Gln Glu Arg Phe Asp His Leu Arg Leu Ile Ile Glu Arg
 85 90 95
 aat aat tta tat gtg gct gga ttt gtt aat acg aca aca aat act ttc 336
 Asn Asn Leu Tyr Val Ala Gly Phe Val Asn Thr Thr Thr Asn Thr Phe
 100 105 110
 tac aga ttt tca gat ttt gca cat ata tca ttg ccc ggt gtg aca act 384
 Tyr Arg Phe Ser Asp Phe Ala His Ile Ser Leu Pro Gly Val Thr Thr
 115 120 125
 att tcc atg aca acg gac agc agt tat acc act ctg caa cgt gtc gca 432

Substitute Sequence Listing																
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gcg	ctg	gaa	cgt	tcc	gga	atg	caa	atc	agt	cgt	cac	tca	ctg	gtt	tca	480
Ala	Leu	Glu	Arg	Ser	Gly	Met	Gln	Ile	Ser	Arg	His	Ser	Leu	Val	Ser	
145					150					155					160	
tca	tat	ctg	gcg	tta	atg	gag	ttc	agt	ggt	aat	aca	atg	acc	aga	gat	528
Ser	Tyr	Leu	Ala	Leu	Met	Glu	Phe	Ser	Gly	Asn	Thr	Met	Thr	Arg	Asp	
				165					170					175		
gca	tca	aga	gca	gtt	ctg	cgt	ttt	gtc	act	gtc	aca	gca	gaa	gcc	tta	576
Ala	Ser	Arg	Ala	Val	Leu	Arg	Phe	Val	Thr	Val	Thr	Ala	Glu	Ala	Leu	
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cgg	ttc	agg	caa	ata	cag	aga	gaa	ttt	cgt	ctg	gca	ctg	tct	gaa	act	624
Arg	Phe	Arg	Gln	Ile	Gln	Arg	Glu	Phe	Arg	Leu	Ala	Leu	Ser	Glu	Thr	
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Ala	Pro	Val	Tyr	Thr	Met	Thr	Pro	Glu	Asp	Val	Asp	Leu	Thr	Leu	Asn	
	210					215					220					
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Trp	Gly	Arg	Ile	Ser	Asn	Val	Leu	Pro	Glu	Tyr	Arg	Gly	Glu	Ala	Gly	
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gtc	aga	gtg	ggg	aga	ata	tcc	ttt	aat	aat	ata	tca	gcg	ata	ctt	ggt	768
Val	Arg	Val	Gly	Arg	Ile	Ser	Phe	Asn	Asn	Ile	Ser	Ala	Ile	Leu	Gly	
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Thr	Val	Ala	Val	Ile	Leu	Asn	Cys	Gly	Asn	Ser	Ser	Arg	Thr	Ile	Thr	
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Gly	Asp	Thr	Cys	Asn	Glu	Glu	Thr	Gln	Asn	Leu	Ser	Thr	Ile	Tyr	Leu	
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Arg	Glu	Tyr	Gln	Ser	Lys	Val	Lys	Arg	Gln	Ile	Phe	Ser	Asp	Tyr	Gln	
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atgacaagat actatcatat acggaatcga tggcaggcaa aagagaaatg gttatcatta																1134
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agaaaaaagc cattgaaagg atgaaggaca cattaagaat cacatatctg accgagacca																1254
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Substitute Sequence Listing

<211> 317
 <212> PRT
 <213> Escherichia coli

<400> 2

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Gln Gln Ser Tyr Val Ser Ser Leu Asn Ser Ile Arg Thr Val Ile Ser
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Thr Pro Leu Glu His Ile Ser Gln Gly Ala Thr Ser Val Ser Val Ile
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Asn His Thr Pro Pro Gly Ser Tyr Ile Ser Val Gly Ile Arg Gly Leu
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Asp Val Tyr Gln Glu Arg Phe Asp His Leu Arg Leu Ile Ile Glu Arg
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Asn Asn Leu Tyr Val Ala Gly Phe Val Asn Thr Thr Thr Asn Thr Phe
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Tyr Arg Phe Ser Asp Phe Ala His Ile Ser Leu Pro Gly Val Thr Thr
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Ser Tyr Leu Ala Leu Met Glu Phe Ser Gly Asn Thr Met Thr Arg Asp
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Ala Ser Arg Ala Val Leu Arg Phe Val Thr Val Thr Ala Glu Ala Leu
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Arg Phe Arg Gln Ile Gln Arg Glu Phe Arg Leu Ala Leu Ser Glu Thr
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Ala Pro Val Tyr Thr Met Thr Pro Glu Asp Val Asp Leu Thr Leu Asn
210     215     220

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Substitute Sequence Listing

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Substitute Sequence Listing

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gca cac gga gct ccc cag act att aca gaa cta tgt tcg gaa tat cgc	1052
Ala His Gly Ala Pro Gln Thr Ile Thr Glu Leu Cys Ser Glu Tyr Arg	
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Asn Thr Gln Ile Tyr Thr Ile Asn Asp Lys Ile Leu Ser Tyr Thr Glu	
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tcg atg gca ggc aaa aga gaa atg gtt atc att aca ttt aag agc ggc	1148
Ser Met Ala Gly Lys Arg Glu Met Val Ile Ile Thr Phe Lys Ser Gly	
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gaa aca ttt cag gtc gaa gtc ccg ggc agt caa cat ata gac tcc cag	1196
Glu Thr Phe Gln Val Glu Val Pro Gly Ser Gln His Ile Asp Ser Gln	
70 75 80	
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Lys Lys Ala Ile Glu Arg Met Lys Asp Thr Leu Arg Ile Thr Tyr Leu	
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acc gag acc aaa att gat aaa tta tgt gta tgg aat aat aaa acc ccc	1292
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aat tca att gcg gca atc agt atg aaa aac tag	1325
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<210> 4
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 <212> PRT
 <213> Escherichia coli

<400> 4

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Thr Glu Ser Met Ala Gly Lys Arg Glu Met Val Ile Ile Thr Phe Lys
50 55 60
Ser Gly Glu Thr Phe Gln Val Glu Val Pro Gly Ser Gln His Ile Asp
65 70 75 80

Substitute Sequence Listing

Ser Gln Lys Lys Ala Ile Glu Arg Met Lys Asp Thr Leu Arg Ile Thr
85 90 95

Tyr Leu Thr Glu Thr Lys Ile Asp Lys Leu Cys Val Trp Asn Asn Lys
100 105 110

Thr Pro Asn Ser Ile Ala Ala Ile Ser Met Lys Asn
115 120